

BINDERLESS PREFORM MANUFACTURE

ABSTRACT OF THE DISCLOSURE

The present invention makes use of loose fibrous material (for instance, chopped fibers) as reinforcement matrix material in the manufacture of carbon-carbon composites. In accordance with this invention, a constraint fixture is provided which can be separated from the mold. The constraint fixture has an internal shape corresponding to the shape of a desired preform component, with the internal shape being defined by a bottom plate (2), an annular ejector plate (3, 3'), a inner wall (10), an outer wall (4), and an annular top plate (11, 11'). The constraint fixture is normally made of metal, porous ceramic, or carbon material. The constraint fixture of the mold holds the loose matrix materials (fibers, along with any fillers and/or additives). The mold assembly itself is segmented, so that the constraint fixture and the loose fill materials in the fixture can be removed and subjected to further processing as a unit. Such further processing may include Chemical Vapor Deposition or resin or pitch infiltration or Resin Transfer Molding. The preform matrix may remain in the constraint fixture through such processing steps as densification and until it is removed therefrom for final machining.